

REMARKS

This is intended as a full and complete response to the Office Action dated December 27, 2006, having a shortened statutory period for response set to expire on March 27, 2007.

CLAIMS

CLAIM OBJECTIONS

Claim 13 is objected to because of an informality related to an antecedent basis for the element "pressure housing". This informality has been corrected as required. Claims 17 and 26 have also been amended to correct informalities. Two elements "(d)" were recited in each of the claims as originally filed.

REJECTION UNDER 35 U.S.C. § 103

In order to establish a case of *prima facie* obviousness, three basic criteria must be met (MPEP § 2141):

1. There must be some suggestion or motivation, either in the reference(s) themselves or in the knowledge, generally available to one of ordinary skill in the art, to modify the reference(s) or to combine the reference teachings;
2. There must be a reasonable expectation of success; and
3. The prior art must teach or suggest all of the claim limitations. The teachings or suggestions to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure.

Claims 1, 2, 5, 6, 9, 10, 13, 14, 17, 18, 21, 23, 25-27, 30, 32, and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,614,718 to Cecconi et al (*Cecconi*). Applicant respectfully traverses the rejections.

Cecconi discloses apparatus and methods for seismic drill hole measuring. More specifically, *Cecconi* discloses apparatus and methods for synchronizing an underground clock 23 with a surface clock 48. In the embodiment cited by the Examiner (column 8, lines 15-28), the underground clock 23 is synchronized with the surface clock 48 at the surface of the earth (see column 8, lines 15-19). The underground clock 23 is disposed within a casing spear 19 (see column 4, lines 12-18). After synchronization at the surface of the earth, the underground clock 23 (still disposed within the casing spear 19) is then lowered into the borehole, either by a "slickline" cable or by free fall, where it functions as an underground means for timing. *Cecconi* discloses only two clocks, namely a surface clock 48 and a underground clock 23. *Cecconi* does not teach or suggest the use of a third clock.

The instant invention discloses apparatus and methods for periodically synchronizing a downhole clock 18 with a reference clock 44 disposed at the surface of the earth. Periodic synchronization is obtained using a third clock that is disposed in a shuttle 20. The shuttle containing the third clock is lowered within the borehole by pumping drilling fluid. This third clock 56 is referred to as a "shuttle" clock. Synchronization of the downhole clock 18 is performed downhole using the shuttle clock 56.

In comparing the instant invention with the *Cecconi* system, *Cecconi* discloses only two clocks identified as the underground clock 23 and the surface clock 48. The instant invention discloses three clocks, namely the downhole clock 18, the reference clock 44, and the shuttle clock 56. *Cecconi* does not, therefore, meet the third criterion for establishing *prima facie* obviousness in that *Cecconi* does not teach or suggest all of the claim limitations of the instant invention, namely three clocks. Furthermore, *Cecconi* does not suggest or motivate apparatus and methods for synchronizing a downhole clock disposed in-situ within the borehole. The first criterion for establishing *prima facie* obviousness is, therefore, not met by *Cecconi*.

Independent claims 1, 9, 17 and 26 either recite three clocks or recite the use of three clocks. In view of the above discussion, these claims are patentable over *Cecconi* in that *Cecconi* fails to meet the first and third criteria for establishing a case of *prima facie* obviousness. Examiner is respectfully requested to reconsider the rejection of claims 1, 9, 17 and 26 under 35 U.S.C. §103(a) as being unpatentable over *Cecconi*. Claims 2, 5 and 6 depend upon claim 1 and are also patentable over *Cecconi*. Claims 10, 13 and 14 depend upon claim 9 and are also patentable over *Cecconi*. Claims 18, 21, 23 and 25 depend upon claim 17 and are also patentable over *Cecconi*. Finally, claims 27, 30, 32, 34 and 35 depend upon claim 26 and are also patentable over *Cecconi*. The Examiner is likewise requested to reconsider the rejection of these dependent claims.

Claims 3, 11, 22 and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Cecconi* in view of U.S Pub 2003/0211768 to Cameron et al (*Cameron*). Applicant respectfully traverses the rejections.

Claims 3, 11, 22 and 31 depend upon claims 1, 9, 17 and 26, respectively. Since claims 1, 9, 17 and 26 are patentable over *Cecconi* for reasons discussed above, dependent claims 3, 11, 22 and 31 are patentable over any combination of *Cecconi* and *Cameron*. The examiner is respectfully requested to reconsider rejections of claims 3, 11, 22 and 31 under 35 U.S.C. § 103(a) as being unpatentable over *Cecconi* in view of *Cameron*.

Claims 7, 8, 15 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Cecconi* in view of U.S Pub 2002/0153481 to Stoller et al (*Stoller*). Applicant respectfully traverses the rejections.

Claims 7 and 8 depend upon claim 1. Claims 15 and 16 depend upon claim 9. Since claims 1 and 9 are patentable over *Cecconi* for reasons discussed above, dependent claims 7, 8, 15 and 16 are patentable over any combination of *Cecconi* and *Stoller*. The Examiner is respectfully requested to reconsider rejections of claims 7, 8, 15 and 16 under 35 U.S.C. § 103(a) as being unpatentable over *Cecconi* in view of *Stoller*.

ALLOWABLE SUBJECT MATTER

The Examiner states that claims 4, 12, 19-20, 24, 28-29 and 33 are objected to as being dependent upon a rejected claim, but would be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims. Claims 4, 12, 19, 20, 24, 28 and 33 have been rewritten as independent claims, and are now thought to meet the Examiner's criteria for allowability. Claim 29 depends upon rewritten claim 28.

SUMMARY

In view of the above discussion and amendments to the claims, the Examiner is respectfully requested to reconsider all rejections and allow claims 1-35.